

BEST AVAILABLE COPY

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 11-238124

(43)Date of publication of application : 31.08.1999

(51)Int.Cl.

G06T 3/40
H04N 5/66

(21)Application number : 10-056084

(71)Applicant : NEC SHIZUOKA LTD

(22)Date of filing : 19.02.1998

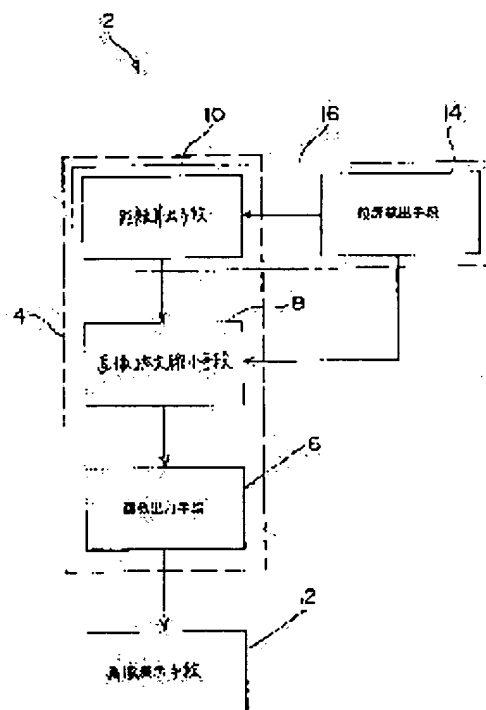
(72)Inventor : WADA HIROSHI

(54) IMAGE DISPLAY METHOD AND DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To change the size of display images corresponding to a distance between a screen and an observer.

SOLUTION: A distance measurement means 16 composed of a position detection means 14 and a distance calculation means 10 measures the distance from the vicinity of the screen of an image display means 12 to an image observer in front of the screen, and an image magnification /reduction means 8 sets the magnification or reduction ratio of images based on the measured result of the distance by the distance measurement means 16 and performs a processing for magnifying or reducing the display images to image data. Then, an image output means 6 generates image signals from the image data processed by the image magnification/reduction means 8 and supplies them to the image display means 12 which displays the images based on the image signals supplied from the image output means 6. Thus, even when the image observer moves and the distance from the vicinity of the screen of the image display means 12 to the image observer in front of the screen is changed, the magnification or reduction ratio of the display images is automatically set corresponding to the distance at the time and the images are displayed in an appropriate size at all times.



LEGAL STATUS

[Date of request for examination] 19.02.1998

[Date of sending the examiner's decision of rejection] 28.09.1999

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

Copyright (C); 1998,2003 Japan Patent Office

*** NOTICES ***

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] The image output step which generates a picture signal from image data, and the image display step which displays an image on the screen of an image display means based on said picture signal generated at said image output step, It is the image display approach containing the image scaling step which makes processing for expanding or reducing a display image to image data the image data for generating said picture signal at said image output step for the image data after deed processing. The image display approach characterized by setting up the dilation ratio or reduction percentage of an image based on the measurement result of said distance in said ranging step at said image scaling step including the ranging step which measures the distance from [near the screen of said image display means] to the image observer ahead of a screen.

[Claim 2] It is the image display approach according to claim 1 characterized by setting up the reduction percentage of an image at said image scaling step that an image should be reduced when said distance to the image observer who measured at said ranging step is short, and setting up the dilation ratio of an image that an image should be expanded when said distance to the image observer who measured at said ranging step is long.

[Claim 3] Said ranging step is the image-display approach according to claim 1 characterized by to include the location detection step which detects the location of the image observer ahead of [of said image display means] a screen, and the distance calculation step which computes said distance from [near the screen of said image display means] to the image observer ahead of a screen based on the location of the image observer who detected at said location detection step.

[Claim 4] The image display approach according to claim 3 characterized by detecting an image observer's three-dimension-location at said location detection step.

[Claim 5] The image display approach according to claim 3 characterized by detecting an image observer's location based on the image which photoed the image observer with the video camera at the location detection step, and was photoed with said video camera.

[Claim 6] The image display approach according to claim 3 characterized by detecting an image observer's location by discharging a supersonic wave towards an image observer from an ultrasonic sensor, and receiving the reflected wave at a location detection step.

[Claim 7] The image output step which generates a picture signal from image data, and the image display step which displays an image on the screen of an image display means based on said picture signal generated at said image output step, It is the image display approach containing the image migration step which makes processing for moving a display image to image data the image data for generating said picture signal at said image output step for the image data after deed processing. The view detection step which detects the view location of the image observer on the screen of said image display step is included. At said image migration step The image display approach characterized by setting up the movement magnitude and the migration direction of an image based on the detection result of an image observer's view location in said view detection step.

[Claim 8] The image display approach according to claim 7 characterized by setting up the movement

magnitude and the migration direction of an image so that the image of a view location may serve as a center of a screen at said image migration step when an image observer's view moves to a periphery from the center section of the screen of said image display step.

[Claim 9] Said view detection step is the image display approach according to claim 7 characterized by detecting said view location by detecting the direction of an image observer's pupil by the optical sensor.

[Claim 10] An image output means to generate a picture signal from image data, and an image display means to display an image based on said picture signal which said image output means generated, It is the image display device equipped with an image scaling means to supply the image data after deed processing for the processing for expanding or reducing a display image to image data to said image output means. It is the image display device characterized by setting up the dilation ratio or reduction percentage of an image based on the measurement result of said distance have a ranging means to measure the distance from [near the screen of said image display means] to the image observer ahead of a screen, and according [said image scaling means] to said ranging means.

[Claim 11] It is the image display device according to claim 10 characterized by setting up the reduction percentage of an image that an image should be reduced when said distance to the image observer whom said ranging means measured of said image scaling means is short, and setting up the dilation ratio of an image that an image should be expanded when said distance to the image observer whom said ranging means measured is long.

[Claim 12] Said ranging means is an image display device according to claim 10 characterized by to have a location detection means detect the location of the image observer ahead of [of said image display means] a screen, and a distance calculation means compute said distance from [near the screen of said image display means] to the image observer ahead of a screen based on an image observer's location which said location detection means detected.

[Claim 13] Said location detection means is an image display device according to claim 12 characterized by detecting an image observer's three-dimension-location.

[Claim 14] A location detection means is an image display device according to claim 12 characterized by detecting an image observer's location based on the image photoed with said video camera including the video camera which photos an image observer.

[Claim 15] A location detection means is an image display device according to claim 12 characterized by being constituted including the ultrasonic sensor which discharges a supersonic wave towards an image observer and receives the reflected wave.

[Claim 16] An image output means to generate a picture signal from image data, and an image display means to display an image based on said picture signal which said image output means generated, It is the image display device equipped with an image migration means to supply the image data after deed processing for the processing for moving a display image to image data to said image output means. It is the image display device characterized by setting up the movement magnitude and the migration direction of an image based on the detection result of the view location of the image observer have a view detection means to detect the view location of the image observer on the screen of said image display means, and according [said image migration means] to said view detection means.

[Claim 17] Said image migration means is an image display device according to claim 16 characterized by setting up the movement magnitude and the migration direction of an image so that the image of a view location may serve as a center of a screen when an image observer's view moves to a periphery from the center section of the screen of said image display means.

[Claim 18] Said view detection means is an image display device according to claim 16 characterized by being constituted including the optical sensor which detects the direction of an image observer's pupil.

[Translation done.]

*** NOTICES ***

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] About the image display approach and an image display device, especially a display image is expanded or reduced automatically, and this invention relates to the image display approach and image display device to which a display image is moved automatically.

[0002]

[Description of the Prior Art] For example, unless, especially as for the image displayed on the display of a personal computer (henceforth a personal computer), an operator operates a keyboard and a mouse, the magnitude is always fixed. Therefore, if an operator separates a few from the screen of a display, the displayed alphabetic character will become small, and will become hard to see, and the details of an image will become unknown.

[0003] By the way, when an operator does the activity of operating a certain equipment installed in the location a little distant from the display, looking at a display in addition to actuation of a keyboard etc., the distance from a display to an operator changes with the activities at that time a lot. Moreover, even when an operator operates only a keyboard and a mouse, the distance from the screen of a display to an operator changes with an operator's positions etc. rather than is necessarily fixed. When the application software which displays an image is equipped with the amplification reduced-display function of an image, it is possible to carry out the amplification reduced display of the image, but whenever it is necessary to perform actuation for it and the distance from a display changes, it is troublesome to perform amplification actuation and cutback actuation.

[0004] Moreover, in order to see the part in more detail, when the part to see when displaying an image, for example on the display of a personal computer is displayed on the periphery of a screen, and making it display in the center of a screen, usually a keyboard and a mouse can be operated, an image can be scrolled and an attention part can be moved in the center of a screen. However, in order to move an image in this way, a keyboard and a mouse must be operated, and it takes time and effort.

[0005]

[Problem(s) to be Solved by the Invention] It was made in order that this invention might solve such a problem in image display, and the object is in offering the image display approach and image display device to which a display image can be appropriately moved only by the image display approach which embraces the distance from a screen to an image observer, and expands or reduces an image automatically, an image display device, and an image observer moving a view.

[0006]

[Means for Solving the Problem] The image output step which generates a picture signal from image data in order that this invention may attain the above-mentioned object, The image display step which displays an image on the screen of an image display means based on the picture signal generated at the image output step, It is the image display approach containing the image scaling step which makes processing for expanding or reducing a display image to image data the image data for generating a picture signal at an image output step for the image data after deed processing. At the image scaling

step, it is considered as the configuration which sets up the dilation ratio or reduction percentage of an image based on the measurement result of the distance in a ranging step including the ranging step which measures the distance from [near the screen of an image display means] to the image observer ahead of a screen. Moreover, the image output step to which this invention generates a picture signal from image data, The image display step which displays an image on the screen of an image display means based on the picture signal generated at the image output step, It is the image display approach containing the image migration step which makes processing for moving a display image to image data. the image data for generating a picture signal at an image output step for the image data after deed processing. At the image migration step, it is considered as the configuration which sets up the movement magnitude and the migration direction of an image based on the detection result of an image observer's view location in a view detection step including the view detection step which detects the view location of the image observer on the screen of an image display step. Moreover, an image output means to generate a picture signal from image data in order that this invention may attain the above-mentioned object, An image display means to display an image based on the picture signal which the image output means generated, It is the image display device equipped with an image scaling means to supply the image data after deed processing for the processing for expanding or reducing a display image to image data to an image output means. It had a ranging means to measure the distance from [near the screen of an image display means] to the image observer ahead of a screen, and the image scaling means was considered as the configuration which sets up the dilation ratio or reduction percentage of an image based on the measurement result of the distance by the ranging means. Moreover, an image output means by which this invention generates a picture signal from image data, An image display means to display an image based on the picture signal which the image output means generated, It is the image display device equipped with an image migration means to supply the image data after deed processing for the processing for moving a display image to image data to an image output means. It had a view detection means to detect the view location of the image observer on the screen of an image display means, and the image migration means was considered as the configuration which sets up the movement magnitude and the migration direction of an image based on the detection result of the view location of the image observer by the view detection means.

[0007] By the image display approach of this invention, in a ranging step, the distance from [near the screen of an image display step] to the image observer ahead of a screen is measured, and processing for setting up the dilation ratio or reduction percentage of an image based on the measurement result of the distance in a ranging step, and expanding or reducing a display image to image data is performed at an image scaling step. And a picture signal is generated from the image data processed at the image scaling step, and an image is expressed as an image output step based on the picture signal generated at the image output step at an image display step. Therefore, even if an image observer moves and the distance to the image observer ahead of a screen changes near the screen of an image display means, according to the distance at that time, the dilation ratio or reduction percentage of a display image can be changed automatically, and an image can be displayed in always suitable magnitude.

[0008] Moreover, by the image display approach of this invention, it sets to a view detection step, the view location of the image observer on the screen of an image display means is detected, and processing for setting up the movement magnitude and the migration direction of an image based on the detection result of an image observer's view location in a view detection step, and moving a display image to image data is performed at an image migration step. And a picture signal is generated from the image data processed at the image migration step, and an image is expressed as an image output step based on the picture signal generated at the image output step at an image display step. Therefore, when an image observer's view moves to the periphery of a screen, in an image migration step, the part which an image observer observes can be displayed in the center of a screen by setting up the movement magnitude and the migration direction of an image so that the image of a view location may serve as a center of a screen.

[0009] In the image display device of this invention, a ranging means measures the distance from [near the screen of an image display means] to the image observer ahead of a screen, and an image scaling

means performs processing for setting up the dilation ratio or reduction percentage of an image based on the measurement result of the distance by the ranging means, and expanding or reducing a display image to image data. And an image output means generates a picture signal from the image data processed by the image scaling means, and supplies it to an image display means, and an image display means displays an image based on the picture signal supplied from the image output means. Therefore, even if an image observer moves and the distance to the image observer ahead of a screen changes near the screen of an image display means, according to the distance at that time, the dilation ratio or reduction percentage of a display image can be changed automatically, and an image can be displayed in always suitable magnitude.

[0010] Moreover, in the image display device of this invention, a view detection means detects the view location of the image observer on the screen of an image display means, and an image migration means performs processing for setting up the movement magnitude and the migration direction of an image based on the detection result of the view location of the image observer by the view detection means, and moving a display image to image data. And an image output means generates a picture signal from the image data processed by the image migration means, and supplies it to an image display means, and an image display means displays an image based on the picture signal supplied from the image output means. Therefore, when an image observer's view moves to the periphery of a screen, in an image migration means, the part which an image observer observes can be displayed in the center of a screen by setting up the movement magnitude and the migration direction of an image so that the image of a view location may serve as a center of a screen.

[0011]

[Embodiment of the Invention] Next, the example of a gestalt of operation of this invention is explained with reference to a drawing. The block diagram showing an example of the image display device according to drawing 1 to this invention and drawing 2 are flow charts which show actuation of the image display device of drawing 1. Below, with reference to these drawings, an example of the image display device of this invention is explained, and the example of a gestalt of implementation of the image display approach of this invention is explained simultaneously.

[0012] As shown in drawing 1, an image display device 2 is constituted including a personal computer 4, and the image output means 6, the image scaling means 8, and the distance calculation means 10 are realized in loading predetermined program data to the main memory of a personal computer 4, and operating CPU based on the program data. The ranging means 16 is constituted by the location detection means 14 and the above-mentioned distance calculation means 10 including the image display means 12 and the location detection means 14 which the image display device 2 was connected to the personal computer 4 other than these functional means.

[0013] The image display means 12 is constituted by a CRT monitor and the liquid crystal display, is given from a personal computer 4 side, and specifically displays an image based on ****, for example, a RGB picture signal, and a synchronizing signal. The image output means 6 generates the above-mentioned RGB picture signal from the image data supplied from the image scaling means 8, and supplies it to the above-mentioned image display means 12 with a synchronizing signal. A location detection means 14 to constitute the ranging means 16 consists of examples of a gestalt of this operation including a non-illustrated video camera, and detects the three-dimension-location of the image observer ahead of [of the image display means 12] a screen based on the image photoed with the video camera. And the distance calculation means 10 computes the distance from [near the screen of the image display means 12] to the image observer ahead of a screen based on an image observer's location which the location detection means 14 detected.

[0014] the image scaling means 8 performs processing for expanding or reducing a display image from a hard disk drive unit to the image data which was carrying out reading appearance within a personal computer 4, and supplies the image data after processing to the image output means 6. The image scaling means 8 sets up the dilation ratio or reduction percentage of an image based on the measurement result of the distance by the ranging means 16 in that case. When the distance to an image observer which the ranging means 16 measured is more specifically short, the reduction percentage of an image is

set up that an image should be reduced, and when the distance to an image observer which the ranging means 16 measured is long, the dilation ratio of an image is set up that an image should be expanded. [0015] Next, actuation of the image display device 2 constituted in this way is explained also with reference to drawing 2. The image scaling means 8 is supplied to the image output means 6 as it is, without performing processing for expanding or reducing a display image to the image data which set the dilation ratio as 1, therefore was first read from the hard disk drive unit. And the image output means 6 generates a RGB picture signal from the image data supplied from the image scaling means 8, and supplies it to the image display means 12 with a synchronizing signal. The image display means 12 displays an image on a screen based on these RGB picture signal and a synchronizing signal. Since the image scaling means 8 omits scaling processing as mentioned above, the image displayed on the screen of the image display means 12 here serves as standard magnitude (step S1).

[0016] Continuing, a location detection means 14 to constitute the ranging means 16 detects the location of the image observer ahead of [of the image display means 12] a screen based on the image photoed with the above-mentioned video camera (step S2). the case where the location detection means 14 is not able to detect an image observer's location here -- (-- step S3 -- the case of No --) -- the non-detecting signal showing that is outputted to the image scaling means 8. It judges with the image observer of the image scaling means 8 not being in convention within the limits ahead of [of the image display means 12] a screen, when this non-detecting signal is received from the location detection means 14, and a dilation ratio is supplied to the image output means 6 as it is, without setting it as 1 and performing scaling processing of an image to image data like an above-mentioned case. Therefore, an image is displayed on the screen of the image display means 12 in standard magnitude in this case (step S1). [0017] On the other hand, when the location detection means 14 is able to detect an image observer's location, Yes) and the location detection means 14 output the signal showing an image observer's location at the (step S3, and the distance calculation means 10 computes the distance from [near the screen of the image display means 12] to the image observer ahead of a screen based on this signal (step S4).

[0018] And the image scaling means 8 is based on the distance to an image observer which the distance calculation means 10 computed, and processing for expanding or reducing a display image to image data is performed (step S5). In more detail, the image scaling means 8 sets up the reduction percentage of an image that an image should be reduced, when the distance to an image observer which the ranging means 16 measured is short, and when the distance to an image observer which the ranging means 16 measured is long, it sets up the dilation ratio of an image that an image should be expanded.

[0019] The image output means 6 generates reception, a RGB picture signal, and a synchronizing signal from the image scaling means 8, and supplies the image data processed in this way to the image display means 12 (step S6). The image display means 12 displays an image on a screen based on these RGB picture signal and a synchronizing signal (step S7). As a result of the image scaling means' 8 performing scaling processing as mentioned above, the image displayed on the screen of the image display means 12 here is expanded when the image observer is separated from the image display means 12, and when the image observer is approaching the image display means 12, it is reduced. And according to an image observer's location where an image observer's location was always detected (step S2), and, as for the location detection means 14, the location detection means 14 detected it, scaling processing of the above images is repeated and an image is displayed on the screen of the image display means 12 in the always suitable magnitude according to an image observer's distance.

[0020] Therefore, in the example of a gestalt of this operation, even when the distance from a screen changes by migration of an image observer or change of a position, an image observer does not need to expand an image, or does not need to perform any actuation for reducing, and an image is displayed on a screen in always suitable magnitude.

[0021] In addition, although [the example of a gestalt of this operation] an image observer is photoed with a video camera and an image observer's location is detected from a photography image, it is also possible to use various sensors, such as an ultrasonic sensor, and to detect an image observer's location besides such an approach.

[0022] Next, the example of a gestalt of operation of the 2nd of this invention is explained. The block diagram in which drawing 3 shows the example of a gestalt of the 2nd operation, and drawing 4 are flow charts which show actuation of the image display device of drawing 3. Below, with reference to these drawings, the example of a gestalt of operation of the 2nd of the image display device of this invention is explained, and the example of a gestalt of implementation of the 2nd of the image display approach of this invention is explained simultaneously. In addition, in drawing 3 and drawing 4, the same sign is given to the same element as drawing 1 and drawing 2, and the detailed explanation about them is omitted here.

[0023] As shown in drawing 3, an image display device 18 is constituted including a personal computer 4, and the image output means 6 and the image migration means 20 are realized in loading predetermined program data to the main memory of a personal computer 4, and operating CPU based on the program data. The image display device 18 includes the image display means 12 and the view location detection means 22 which were connected to the personal computer 4 other than these functional means.

[0024] In the example of a gestalt of this operation, the view location detection means 22 is that an image observer detects the direction of an image observer's pupil by the optical sensor including the optical sensor with which it equips near the regio frontalis capitis, detects the view location of the image observer on the screen of the image display means 12, and outputs a detection result to a personal computer 4 with an electrical signal. the image migration means 20 performs processing for moving a display image from a hard disk drive unit to the image data which carried out reading appearance within a personal computer 4. The image migration means 20 sets up the movement magnitude and the migration direction of an image based on the detection result of the view location of the image observer by the view location detection means 22 in that case. When an image observer's view moves to a periphery from the center section of the screen of the image display means 12, more specifically, the image migration means 20 sets up the movement magnitude and the migration direction of an image so that the image of a view location may serve as a center of a screen.

[0025] Next, actuation of the image display device 18 constituted in this way is explained also with reference to drawing 4. The image migration means 20 is supplied to the image output means 6 as it is, without performing processing for setting the movement magnitude of an image as 0, therefore moving a display image to image data first. And the image output means 6 generates a RGB picture signal from the image data supplied from the image migration means 20, and supplies it to the image display means 12 with a synchronizing signal. The image display means 12 displays an image on a screen based on these RGB picture signal and a synchronizing signal. Since the image migration means 20 omits migration processing as mentioned above, the location of the image displayed on the screen of the image display means 12 here is a standard location (step S11).

[0026] Continuing, based on the direction of the pupil detected by the above-mentioned optical sensor, the view location detection means 22 detects the location on the screen of an image observer's view (step S12), and supplies a detection result to the image migration means 20. It judges whether the image migration means 20 has a view location within the limits of the screen of the image display means 12 first, when the detection result of this view location is received (step S13). And when a judgment result is a no, the image migration means 20 is supplied to the image output means 6 as it is, without performing migration processing of an image to image data like an above-mentioned case. Therefore, an image is displayed on a standard location on the screen of the image display means 12 in this case (step S11).

[0027] a judgment result [in / on the other hand / step S13] -- yes, it comes out, and when it is, it is based on the view location on the screen of the image observer whom the view location detection means 22 detected, and the image migration means 20 sets up the movement magnitude and the migration direction of [on the screen of an image], and performs processing for moving a display image to image data (step S14). In more detail, while an image observer's view is moving to the periphery from the center section of the screen of the image display means 12, the image migration means 20 sets up the movement magnitude and the migration direction of an image so that the image of a view location may

serve as a center of a screen.

[0028] The image output means 6 generates reception, a RGB picture signal, and a synchronizing signal from the image migration means 20, and supplies the image data processed in this way to the image display means 12 (step S15). The image display means 12 displays an image on a screen based on these RGB picture signal and a synchronizing signal (step S16). The image displayed on the screen of the image display means 12 here is what the attention part on an image observer's screen moved to the center section of the screen, as a result of the image migration means' 20 performing migration processing as mentioned above. According to an image observer's location which the view location detection means 22 had always detected an image observer's view location (step S12), and the view location detection means 22 detected, migration processing of the above images is repeated and an image is displayed that an image observer's attention part always serves as a center of a screen on the screen of the image display means 12.

[0029] Therefore, in the example of a gestalt of the 2nd operation, since an attention part is in the periphery of a screen, whenever an image observer moves a view to the part, an image is moved so that the attention part may come in the center of a screen promptly, and an image observer can see the attention part of an image in the center section of the screen, without operating image migration by the keyboard or the mouse entirely.

[0030]

[Effect of the Invention] As explained above, by the image display approach of this invention, the distance from [near the screen of an image display step] to the image observer ahead of a screen is measured in a ranging step, and at an image scaling step, processing for setting up the dilation ratio or reduction percentage of an image based on the measurement result of the distance in a ranging step, and expanding or reducing a display image to image data is performed. And a picture signal is generated from the image data processed at the image scaling step, and an image is expressed as an image output step based on the picture signal generated at the image output step at an image display step. Moreover, in the image display device of this invention, a ranging means measures the distance from [near the screen of an image display means] to the image observer ahead of a screen, and an image scaling means performs processing for setting up the dilation ratio or reduction percentage of an image based on the measurement result of the distance by the ranging means, and expanding or reducing a display image to image data. And an image output means generates a picture signal from the image data processed by the image scaling means, and supplies it to an image display means, and an image display means displays an image based on the picture signal supplied from the image output means. Therefore, even if an image observer moves and the distance to the image observer ahead of a screen changes near the screen of an image display means, according to the distance at that time, the dilation ratio or reduction percentage of a display image can be changed automatically, and an image can be displayed in always suitable magnitude. It becomes unnecessary therefore, for an image observer to expand an image or to perform actuation for reducing entirely.

[0031] Moreover, by the image display approach of this invention, it sets to a view detection step, the view location of the image observer on the screen of an image display means is detected, and processing for setting up the movement magnitude and the migration direction of an image based on the detection result of an image observer's view location in a view detection step, and moving a display image to image data is performed at an image migration step. And a picture signal is generated from the image data processed at the image migration step, and an image is expressed as an image output step based on the picture signal generated at the image output step at an image display step. Moreover, in the image display device of this invention, a view detection means detects the view location of the image observer on the screen of an image display means, and an image migration means performs processing for setting up the movement magnitude and the migration direction of an image based on the detection result of the view location of the image observer by the view detection means, and moving a display image to image data. And an image output means generates a picture signal from the image data processed by the image migration means, and supplies it to an image display means, and an image display means displays an image based on the picture signal supplied from the image output means. Therefore, when an image

observer's view moves to the periphery of a screen, the part which an image observer observes can be displayed in the center of a screen by setting up the movement magnitude and the migration direction of an image so that the image of a view location may serve as a center of a screen. Therefore, an image observer can always see the attention part of an image in the center section of the screen, without operating image migration by the keyboard or the mouse entirely.

[Translation done.]

* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing an example of the image display device by this invention.

[Drawing 2] It is the flow chart which shows actuation of the image display device of drawing 1 .

[Drawing 3] It is the block diagram showing the example of a gestalt of the 2nd operation.

[Drawing 4] It is the flow chart which shows actuation of the image display device of drawing 3 .

[Description of Notations]

2 [.. An image scaling means, 10 / .. A distance calculation means, 12 / .. An image display means, 14 / .. A location detection means, 16 / .. A ranging means, 18 / .. An image display device, 20 / .. An image migration means, 22 / .. View location detection means.] An image display device, 4 .. A personal computer, 6 .. An image output means, 8

[Translation done.]

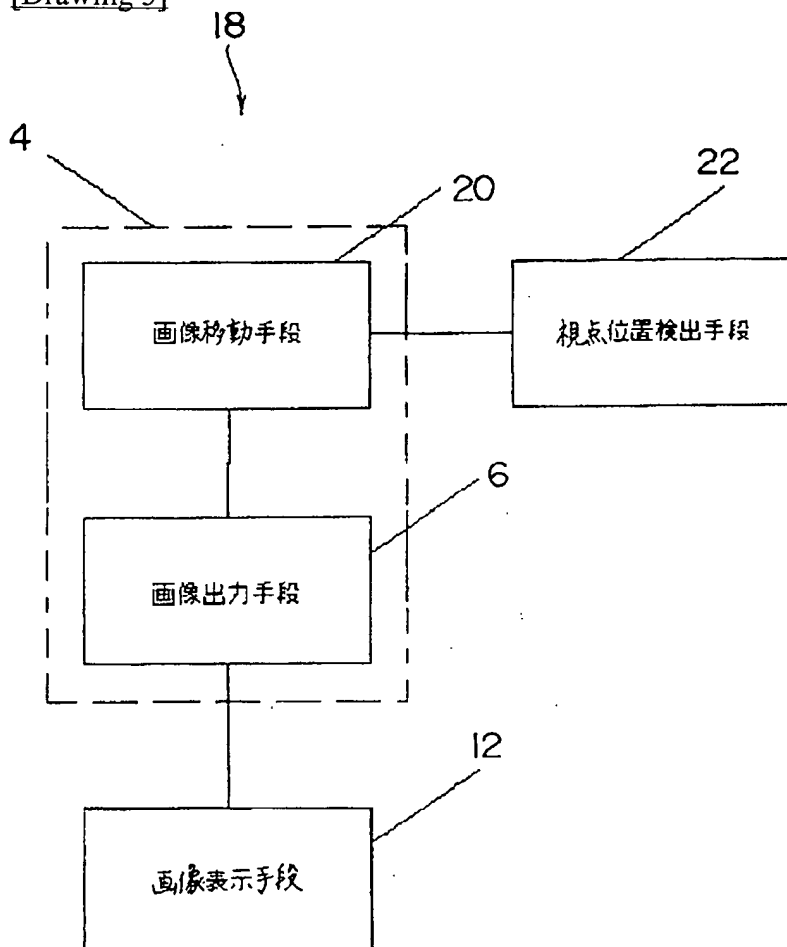
* NOTICES *

JPO and NCIPi are not responsible for any damages caused by the use of this translation.

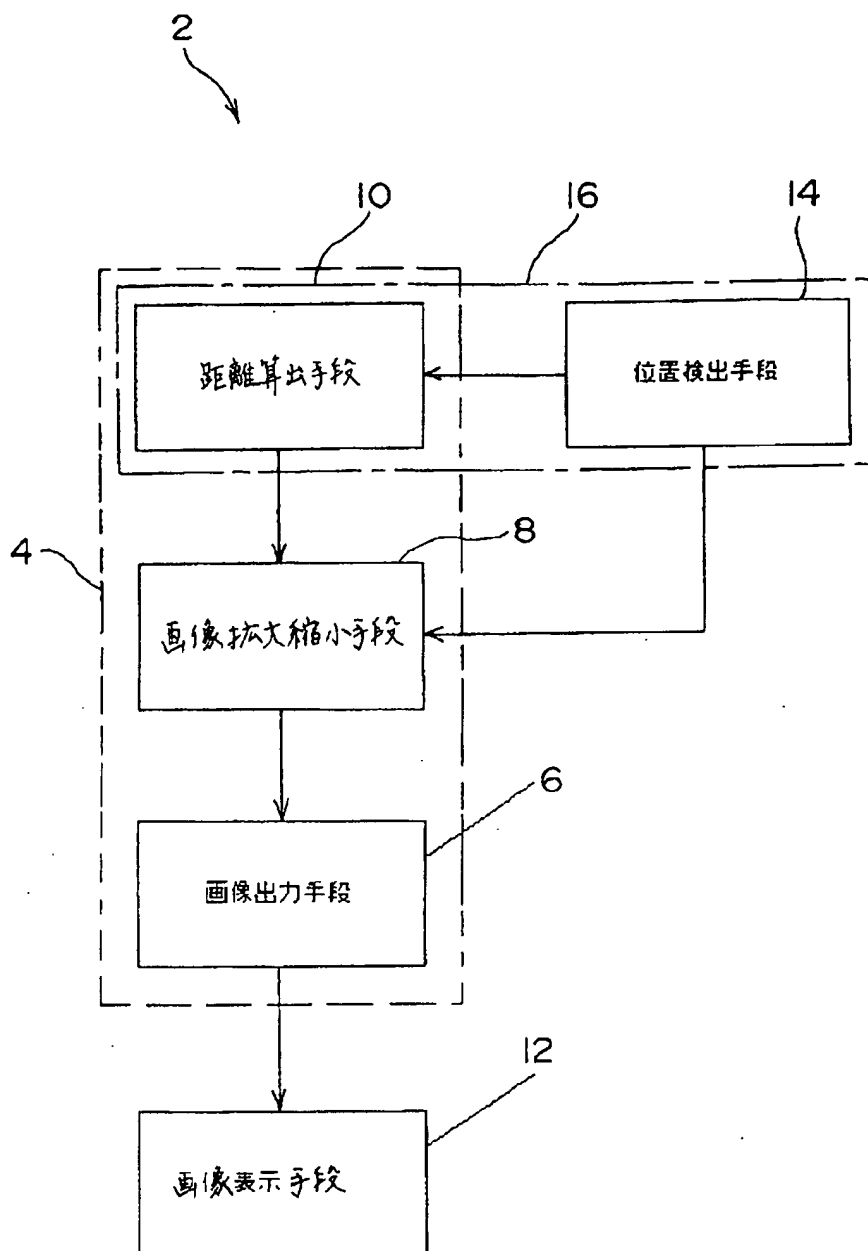
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DRAWINGS

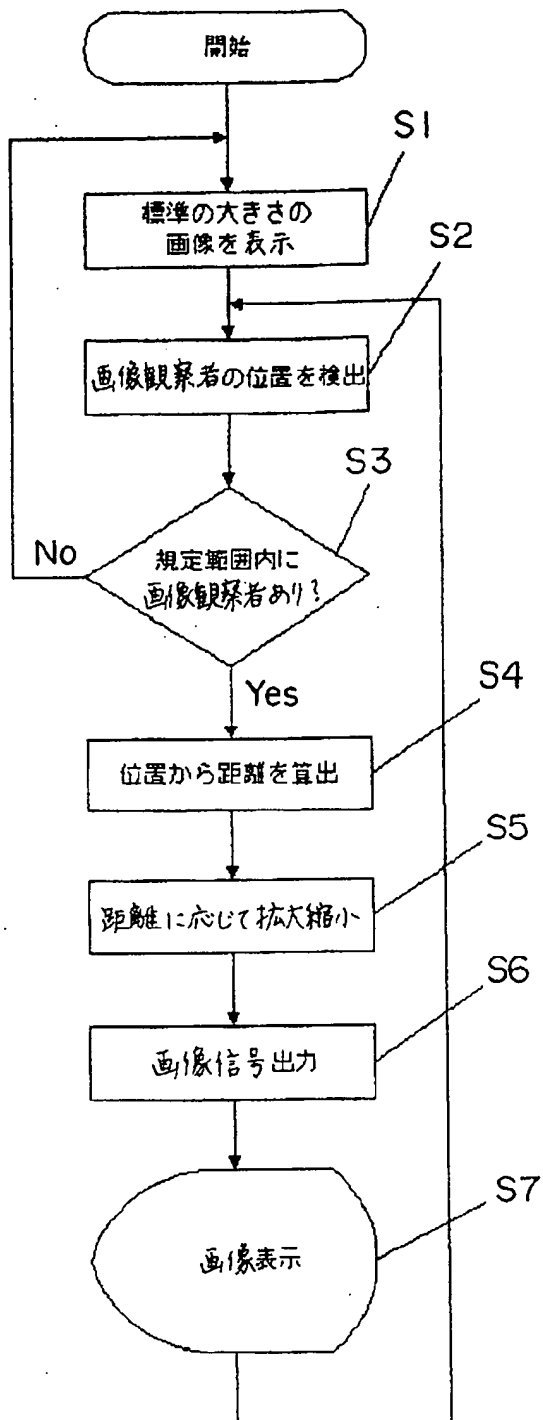
[Drawing 3]



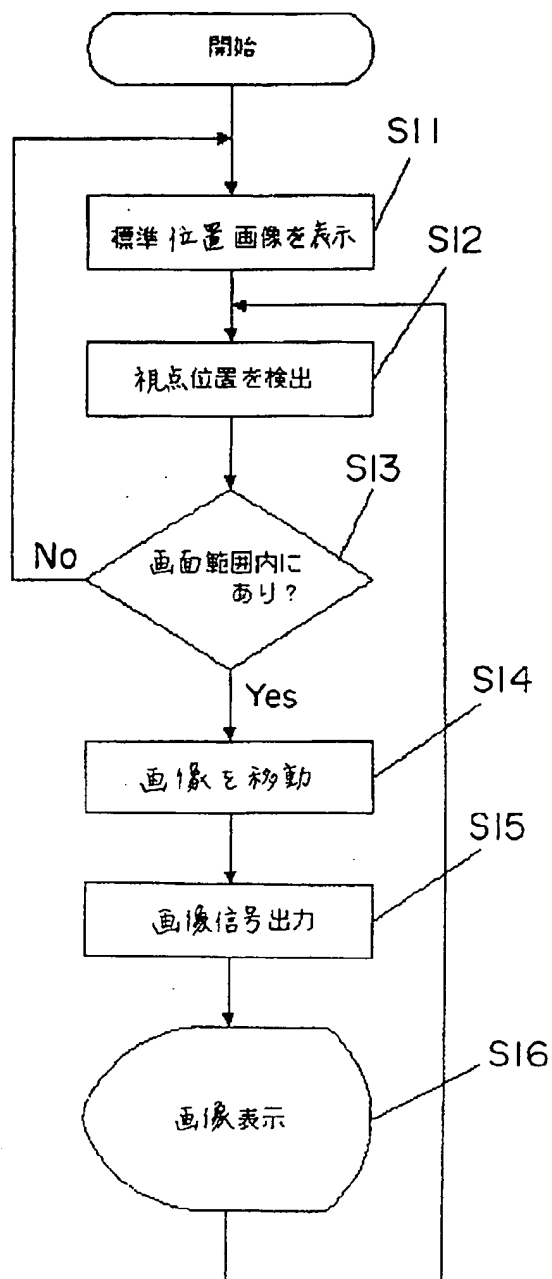
[Drawing 1]



[Drawing 2]



[Drawing 4]



[Translation done.]

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☒ BLACK BORDERS
- ☒ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☒ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☒ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.